

REMARKS

The Office Action mailed August 7, 2006, has been carefully reviewed and the foregoing amendment has been made in consequence thereof.

Claims 1, 3-7 and 9-20 are now pending in this application. Claims 1, 3-7 and 9-13 stand rejected. Claims 14-20 are allowed.

Applicant's greatfully acknowledge Examiner's indication that Claims 14-20 are allowed.

The rejection of Claims 1, 3-7, and 9-13 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Pat. No. 5,246,340 (Winstanley) in view of U.S. Pat. No. 5,813,835 (Corsmeier) is respectfully traversed.

Winstanley describes an internally-cooled hollow blade (14) for use with a gas turbine engine (10). The blade (14) includes a plurality of ribs (38, 40, 42, 46, 48, and 50) which each extend across the interior of blade (14) between the blade pressure and suction sidewalls (22 and 24, respectively). The ribs (38, 40, 42, 46, 48, and 50) define a plurality of internal cavities (52, 54, 56, 58, 60, 62, 64, and 66) that extend chord-wise from a leading edge (18) to a trailing edge (20) of blade (14). A plurality of passages (39, 41S, 41P, 43P, 43S, 45, 47, 49, and 51) extend through the ribs (38, 40, 42, 46, 48, and 50) to facilitate delivery of cooling air flow to adjacent cavities (52, 54, 56, 58, 60, 62, 64, and 66) in a general chordwise flow direction. The blade (14) includes a plurality of exhaust apertures (68, 70, and 72) which exhaust spent cooling air from the interior cavities (52, 54, 56, 58, 60, 62, 64, and 66) to the exterior of the blade. Notably, Winstanley does not describe nor suggest defining a pressure side and a suction side cooling circuit, but rather describe a plurality of internal cavities that extend within the interior of the blade from the pressure side of the blade to the suction side of the blade and that are spaced chordwise from the leading edge to the trailing edge of the blade.

Corsmeier describes an internally-cooled turbine blade (16) that includes a concave sidewall (18) and a convex sidewall (20). The blade (16) also includes a pair of serpentine side cooling passages (22 and 24), a middle cooling passage (26), a trailing edge cooling

passage (30), and a leading edge cooling passage (28). Air is admitted to blade (10) through its root (12) and is channeled to various cooling passages (22, 24, 26, 28, and 30). Air entering passage (22) exits blade (10) through an orifice (52) and facilitates cooling concave side (18). Air within cooling passage (28) is ejected through film cooling holes (29) to facilitate cooling leading edge (17). Air within trailing edge cooling passage (30) is ejected across a trailing edge (19) of blade (10). Notably, Corsmeier does not describe nor suggest defining at least one row of openings within at least one of the rib walls extending between adjacent cooling chambers and positioning each opening adjacent an inner surface of the concave sidewall or an inner surface of the convex sidewall.

Applicants respectfully submit that the Section 103 rejection of presently pending claims is not a proper rejection. Obviousness cannot be established by merely suggesting that it would have been obvious to one of ordinary skill in the art to combine Corsmeier with Winstanley. More specifically, it is respectfully submitted that a prima facie case of obviousness has not been established. As explained by the Federal Circuit, “to establish obviousness based on a combination of the elements disclosed in the prior art, there must be some motivation, suggestion or teaching of the desirability of making the specific combination that was made by the Applicant.” In re Kotzab, 55 USPQ2d 1313, 1316 (Fed. Cir. 2000). MPEP 2143.01.

Moreover, as is well established, the mere fact that the prior art structure could be modified does not make such a modification obvious unless the prior art suggests the desirability of doing so. See In re Gordon, 221 U.S.P.Q.2d 1125 (Fed. Cir. 1984). Furthermore, the Federal Circuit has determined that:

[i]t is impermissible to use the claimed invention as an instruction manual or “template” to piece together the teachings of the prior art so that the claimed invention is rendered obvious. This court has previously stated that “[o]ne cannot use hindsight reconstruction to pick and choose among isolated disclosures in the prior art to deprecate the claimed invention.”

In re Fitch, 23 USPQ2d 1780, 1784 (Fed. Cir. 1992). Further, under Section 103, “it is impermissible . . . to pick and choose from any one reference only so much of it as will support a given position, to the exclusion of other parts necessary to the full appreciation of what such reference fairly suggests to one of ordinary skill in the art.” In re Wesslau, 147 USPQ 391, 393 (CCPA 1965). Rather, there must be some suggestion, outside of

Applicant's disclosure, in the prior art to combine such references, and a reasonable expectation of success must be both found in the prior art, and not based on Applicant's disclosure. In re Vaeck, 20 U.S.P.Q.2d 1438 (Fed. Cir. 1991). In the present case, neither a suggestion nor motivation to combine the cited art, nor any reasonable expectation of success has been shown.

Accordingly, since there is no teaching nor suggestion in the cited art for the claimed combination, the Section 103 rejection appears to be based on a hindsight reconstruction in which isolated disclosures have been picked and chosen in an attempt to deprecate the present invention. Of course, such a combination is impermissible, and for this reason alone, Applicant requests that the Section 103 rejection of Claims 1, 3-7, and 9-13 be withdrawn.

In addition, no combination of Winstanley and Corsmeier describes or suggests the claimed invention. Specifically, Claim 1 recites a method of fabricating a rotor blade for a gas turbine engine, wherein the rotor blade includes an airfoil having a first sidewall and a second sidewall connected together at a leading edge and a trailing edge, such that a cavity is formed therebetween, wherein the method comprises "forming a plurality of rib walls that extend at least partially between the first and second sidewalls, wherein the rib walls define a pressure side cooling circuit and a suction side cooling circuit that each include at least three cooling chambers, wherein a first of the cooling chambers within each circuit supplies cooling fluid to the airfoil cavity . . . and forming at least one row of openings within at least one of the rib walls extending between adjacent cooling chambers of each circuit . . . wherein each opening is adjacent one of an inner surface of the first sidewall and an inner surface of the second sidewall, such that the remaining cooling chambers are coupled in flow communication to the first cooling chamber via the openings."

No combination of Winstanley and Corsmeier describes nor suggests a method of fabricating a rotor blade for a gas turbine engine as is recited in Claim 1. Specifically, no combination of Winstanley and Corsmeier describes nor suggests forming a plurality of rib walls that extend at least partially between the first and second sidewalls, wherein the rib walls define a pressure side cooling circuit and a suction side cooling circuit that each include at least three cooling chambers in combination with forming at least one row of openings within at least one of the rib walls extending between adjacent cooling chambers of each circuit, and positioning each opening adjacent an inner surface of the first sidewall or an inner

surface of the second sidewall. Rather, in contrast to the present invention, Winstanley describes a blade including a plurality of chordwise-spaced cavities that extend from the pressure-side of the blade to the suction-side of the blade and that are coupled serially together in flow communication through mid-chord passages, and Corsmeier describes an airfoil which includes a plurality of rib walls that extend between adjacent chambers, but does not describe nor suggest any openings within any rib walls to couple the chambers together in flow communication or positioning rib wall openings adjacent an inner surface of a first or second sidewall. As such, no combination of Winstanley and Corsmeier describes or suggests forming a plurality of rib walls that extend at least partially between the first and second sidewalls, wherein the rib walls define a pressure side cooling circuit and a suction side cooling circuit that each include at least three cooling chambers in combination with forming at least one row of openings within at least one of the rib walls extending between adjacent cooling chambers of each circuit, and positioning each opening adjacent an inner surface of the first sidewall or an inner surface of the second sidewall. Accordingly, for at least the reasons set forth above, Claim 1 is submitted to be patentable over Winstanley in view of Corsmeier.

Claims 3-6 depend from independent Claim 1. When the recitations of Claims 3-6 are considered in combination with the recitations of Claim 1, Applicants submit that dependent Claims 3-6 likewise are patentable over Winstanley in view of Corsmeier.

Claim 7 recites an airfoil for a gas turbine engine, wherein the airfoil comprises “a first sidewall and a second sidewall coupled together at a leading edge and a trailing edge, such that a cavity is defined therebetween . . . a plurality of rib walls extending at least partially between said first and second sidewalls, said plurality of rib walls defining a pressure side cooling circuit and a suction side cooling circuit that each have at least three cooling chambers . . . at least one row of openings extending through at least one of said rib walls, each of said openings is adjacent one of an inner surface of said first sidewall and an inner surface of said second sidewall, wherein a first of said cooling chambers of each circuit supplies cooling fluid to said cavity, and said remaining cooling chambers within each circuit are coupled in flow communication with said first cooling chamber via said openings.”

No combination of Winstanley and Corsmeier describes nor suggests an airfoil for a gas turbine engine as is recited in Claim 7. Specifically, no combination of Winstanley and

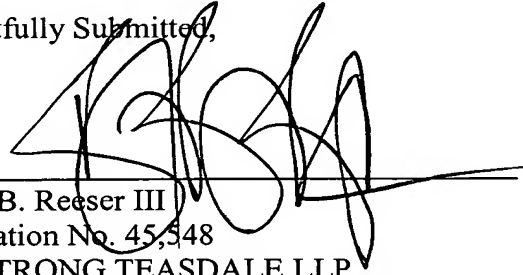
Corsmeier describes nor suggests a plurality of rib walls extending at least partially between first and second sidewalls wherein the plurality of rib walls define a pressure side cooling circuit and a suction side cooling circuit that each have at least three cooling chambers, in combination with at least one row of openings extending through at least one rib wall such that each opening is positioned adjacent an inner surface of the first sidewall or an inner surface of the second sidewall. Rather, in contrast to the present invention, Winstanley describes a blade that includes a plurality of chordwise spaced cavities that extend between the pressure and suction sides of the blade and that are coupled serially together in flow communication through mid-chord passages, and Corsmeier describes an airfoil which includes a plurality of solid ribs that extend across the airfoil, none of which includes any openings positioned adjacent an inner surface of a first or second sidewall. Accordingly, for at least the reasons set forth above, Claim 7 is submitted to be patentable over Winstanley in view of Corsmeier.

Claims 9 -13 depend from independent Claim 7. When the recitations of Claims 9-13 are considered in combination with the recitations of Claim 7, Applicants submit that dependent Claims 9-13 likewise are patentable over Winstanley in view of Corsmeier.

For at least the reasons set forth above, Applicants respectfully request that the Section 103 rejection of Claims 1, 3-7, and 9-13 be withdrawn.

In view of the foregoing amendments and remarks, all the claims now active in this application are believed to be in condition for allowance. Reconsideration and favorable action is respectfully solicited.

Respectfully Submitted,



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